

# Changing

*Research-based principles of early intervention explode the myth that nothing works for economically disadvantaged children.*

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**F**or a nation that claims to place a priority on leaving no child behind, the United States has allowed a tragic paradox to evolve over the last several decades. On one hand, the neurobiological, behavioral, and social sciences have seen an explosion of research on children's development (Shonkoff & Phillips, 2000). These scientific advances have dramatically increased our capacity to intervene and support highly vulnerable children.

On the other hand, it is astonishing how little this growing body of research has improved the prospects for children growing up most at risk. With social and economic circumstances placing more and more families at high risk (Wertheimer & Croan, 2003), no one would question the urgency of finding new ways to break the cycle of disadvantage. Yet despite nearly half a century of considerable research, we have rarely used the findings of these studies constructively to improve policy and practice for disadvantaged children and their families.

The gap between knowledge and action may spring from the multidisciplinary nature of intervention. Research on the developmental trajectory of children has typically cut across many traditional academic boundaries in both the physical



# the Odds

and social sciences. Fortunately, recent research syntheses have helped generate a new, integrated science of child development (Farran, 2000; Shonkoff & Meisels, 2000). The findings from these syntheses are robust: Scientific studies now show that, under the right conditions, early intervention can dramatically improve the odds for children at risk.

## What Do We Know?

*Intervention* refers to systematic and intentional efforts to provide supplemental health, education, and social services to at-risk children and their families. The at-risk designation is usually associated with poverty, although it may include many other factors, such as lack of maternal education, limited English proficiency, low birth weight, and medical impairments (Neuman, 2003).

Whatever formula we use to identify those at risk, we find the same implications: For disadvantaged children, the prospects are bleak (Rothstein, 2004). These children are likely to progress poorly in school, with concomitant risks associated with low grades, retention, special education placement, school dropout, and later, adult unemployment. Some researchers have expressed profound skepticism that any form of education intervention can alter the cumulative negative toll that poverty and other disadvantages take on the development of young children (Herrnstein & Murray, 1996).

The recent research syntheses, however, reveal that early interventions can produce meaningful, sustainable gains in cognitive, social, and emotional development for high-risk children. In fact, a cross-sectional analysis of these studies (Neuman, in press) found remarkable consistencies in major findings about education interventions. The story that the research reveals is striking: When chil-

dren receive responsive, consistent caregiving in safe, stimulating settings, they can make a remarkable recovery from the devastations of poverty. They can learn how to form healthy relationships with others, become eager to learn, and develop the skills and knowledge necessary to finish school and build a productive life. But the subplot in this story is equally important: Interventions are only effective under certain circumstances.

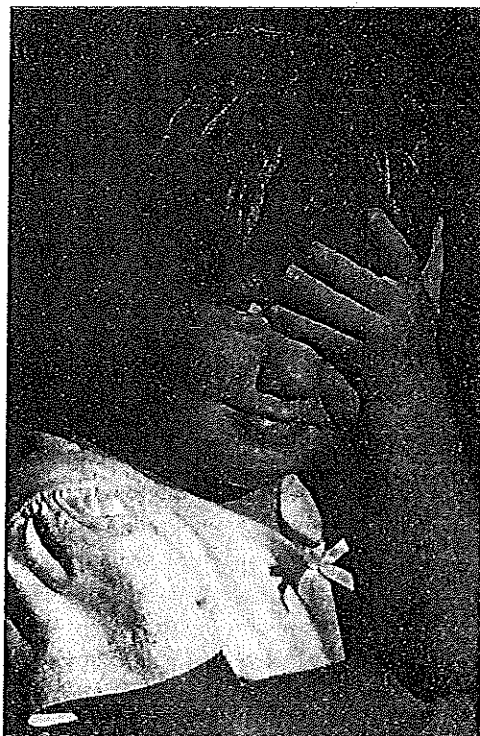
## Principles of Effective Intervention

Programs and policies that produce moderate to large effects on children's cognitive and social development are consistently characterized by seven major research-based principles. Together, these principles provide a road map for policy-makers in funding what works and for educators and caregivers in ensuring that we implement programs that lead to sustainable benefits for children.

### Targeting

Research indicates that the children most likely to benefit from interventions are those at greatest risk. For both biologically and environmentally vulnerable populations, program effects are greatest for more disadvantaged children and families.

For example, an analysis of findings from the Perry Preschool Project, a preschool intervention program, reveals that the children who showed the greatest relative gains were those who had receptive language skills more than two standard deviations below average (Schweinhart, 2004). Similarly, children of higher-risk participants in the Nurse-Family Partnership program—a home-visiting program in Memphis, Tennessee, providing health care and parent education to first-time mothers—benefited more than those in the



lower-risk groups (Olds et al., 2004). These gains translated into important cost benefits: The public saved \$6.92 for every dollar invested in the program for those at higher risk, but only \$1.43 for every dollar invested for those at lower risk (Bruner, 2004).

Why is targeting so important? By focusing on the children with the greatest needs, targeted programs can establish smaller adult-child ratios and individualize service delivery. For example, Early Head Start ([www.ehsnrc.org](http://www.ehsnrc.org)), a program emphasizing parent education in the very earliest years, works on the basis of parents' and children's individual needs. Weekly visits focus on helping families reach overall benchmarks specially tailored to the family's most crucial needs (Raikes et al., 2006).

Programs thwarted by inadequate resources and the resulting professional inertia have often worsened the situation for poor children. Targeted programs enable us to serve these children without diluting the quality of the intervention by spreading resources too thin.

### **Developmental Timing**

Developmental timing refers to the actual onset of the intervention. In many cases, the earlier children receive help, the better. For example, it is far more efficient to prevent reading difficulties early than to wait until more serious problems occur and costly remediation becomes necessary (Snow, Burns, & Griffin, 1998). We must also be cautious, however, about intervening too early—for example, by falsely identifying students as learning disabled when they merely need more time. Such overidentification can lead schools to engage students in developmentally inappropriate activities. Drilling young children in alphabet skills when they are only beginning to explore these symbol systems can be counterproductive, smothering their interest and motivation to read later on (Lyon & Fletcher, 2001).

In dealing with some conditions, such as chronic health issues, early identification and intervention are crucial. The Brookline Early Education Project (BEEP), a school-based prekindergarten program operating in two Massachusetts communities (Brookline and Boston), conducted early and periodic assessments of children from shortly after birth until entry into kindergarten to monitor their development and to head off health problems. These early diagnostic screenings were effective in reducing communication and cognitive problems caused by hearing loss related to chronic ear infections (Hauser-Cram, Pierson, Walker, & Tivnan, 1991).

## **Intensive programs treat their time with children and parents as a limited and valuable resource.**

Similarly, research found that Avance ([www.avance.org](http://www.avance.org))—a multifaceted intervention operating in about 10 Texas communities and providing health care, education, and support for Latina mothers with children from birth to age 3—was effective in preventing early developmental concerns from becoming more serious problems later on (Rodriguez, 1999). Avance's nine-month core program educates mothers about their children's emotional, physical, social, and cognitive development, as well as providing literacy, English-language, and GED preparation classes.

Policymakers should consider several important guidelines when deciding on the timing of early intervention:

- Programs that provide direct services to parents should begin as early as the prenatal period, or within a few weeks of birth.

- Programs that provide periodic screening, health care, good nutrition, and tactile/kinesthetic stimulation to

children should also begin as early as possible. These programs can significantly reduce health care costs.

- Programs that provide direct services to children in child care and preschool settings should begin in the late toddler/early preschool years.

### **Intensity**

Another consideration is the intensity of the intervention. The equation here is simple: More intensive programs produce larger positive effects. Similarly, children and parents who participate most actively and regularly show the greatest overall progress.

What matters in intensity is not only the amount of time devoted to the

program but also how the program uses that time. Intensive programs are highly focused; they treat their time with children and parents as a limited and valuable resource. For example, Bright Beginnings ([www.cms.k12.nc.us/programs/PrekServices/index.asp](http://www.cms.k12.nc.us/programs/PrekServices/index.asp)), a full-day prekindergarten program currently serving approximately 3,000 children in the Charlotte-Mecklenburg School District, North Carolina, zeros in on children's cognitive, language, gross-motor, fine-motor, and visual-motor skills—all strongly related to school readiness. Teachers meet regularly with diagnostic specialists and work individually with children who need additional attention. School district evaluations have found that Bright Beginnings students show significant gains in literacy and math at the end of 1st grade (Smith, Pellin, & Agruso, 2003).

We can examine intensity by asking, What specific interventions does the program add to the child's regular early

childhood activities—how often, for how long, with how many other children, and administered by whom? Children are likely to make good progress if they receive help for a substantial length of time each day, one-to-one or in a small group, with a highly trained professional. But if services are intermittent or infrequent—such as a home visit once a month or a three-hour class one day a week—the program is likely to be inadequate. Changing the outlook for highly vulnerable families is a gradual, fragile, and often reversible process; our most needy children and their families typically need extensive and specific support.

### **Professional Training**

High-quality programs are defined not only by the services delivered, but also by the staff that delivers them. A substantial body of research attests to the importance of highly trained staff (Bowman, Donovan, & Burns, 2000). Programs that demonstrate significant, long-term, life-changing effects for our most disadvantaged children all use professionals, not just paraprofessionals or volunteers.

There is no substitute for a well-trained staff's knowledge, commitment, and ability to interact with the target population. These factors are fundamental to the success of any intervention. Best-evidence syntheses, for example, have repeatedly shown the benefits of highly qualified teachers in early childhood programs (Barnett, 1995).

Quick-fix training programs will not work. We must recognize that successful intervention for our most at-risk children requires our best teachers and service providers—caring, competent, flexible, highly trained individuals. Nothing less will do.

### **Coordinated Services**

More often than not, families and children who are in greatest need of early intervention struggle with persistent health problems, poor nutrition, and a

high degree of stress in their lives. We cannot undo the damage caused by these combined conditions with isolated fragments of help that focus on one particular area.

Successful programs that change the odds for children reach beyond traditional boundaries, helping to coordinate health, social services, and education for families who must often deal with tremendous obstacles. These programs recognize that children learn best when they are healthy, safe, and in close and enduring relationships with family, caregivers, and teachers. The essential features of coordinated services include (1) providing children with health and developmental screening and monitoring, (2) supporting families through direct and indirect services, and (3) connecting strong education interventions for children with family support through information and parent education.

Head Start, a clear leader in establishing comprehensive services, has from its inception provided much-needed health and nutrition support to families with a variety of concrete problems (Zigler & Valentine, 1979). One of its most important contributions has been an emphasis on the whole child. A number of programs have followed Head Start's lead, demonstrating powerful long-term effects on children's development. For example, the Child-Parent Center Program, now running for more than 30 years in the most impoverished areas of Chicago, provides a skills-based early childhood program along with comprehensive family supports

that include health and social services. Community-based programs and health and nutrition specialists are located on-site, offering a wide array of programs to support family life (Reynolds, 2000). A follow-up study examining 1,529 20-year-olds found that more than two-thirds of the students who attended the program achieved a higher rate of high school completion (50 percent compared with



39 percent for students who did not attend) and a lower rate of juvenile arrests (17 percent compared with 25 percent). The program provided an economic return of \$7.10 for every dollar invested (Reynolds, Temple, Robertson, & Mann, 2001).

Programs that treat families with dignity and respect—and are sensitive to their cultural and socioeconomic circumstances—encourage greater use of services and are therefore more effective.



### *Compensatory Instruction*

In the early years, children rapidly develop the foundational capacities on which they build their subsequent development. In addition to their rapid growth in the linguistic and cognitive domains, they establish crucial dispositions for learning, such as motivation, curiosity, and problem-solving skills.

Social and economic disadvantages can seriously compromise these impor-

fore provide higher-quality and faster-paced instruction than more advantaged children would need.

■ They achieve accelerated progress by focusing on specific learning goals, such as helping children use language more flexibly and confidently to express ideas and to understand logical relationships.

In compensatory programs, depth matters more than breadth. The Abecedarian early intervention program,

for example, placed special emphasis on language development. The program provided economically disadvantaged 4-year-olds with individual sessions that focused on prephonics skills twice weekly for 45 weeks. Caregivers and teachers received intensive training in how to foster sociolinguistic competence in the children. The language curriculum, which was implemented throughout the day, focused on pragmatic features rather than syntax and emphasized the contingent and interactive features of adult-child language (Campbell & Ramey, 1995).

The Abecedarian project was a controlled scientific study that randomly assigned four cohorts of children, born

between 1972 and 1977, to either the early educational intervention group or the control group. Follow-up studies conducted at ages 12, 15, and 21 found that participants received long-lasting benefits from the program (FPG Child Development Institute, n.d.).

If we spend funds on programs that ignore disadvantaged children's significant difficulties and attempt to mimic the kinds of environments that average preschoolers typically experience, we

may merely intensify the differences among children of different social classes. Compensatory programs, through their intensity, focus, and accountability, have produced powerful and lasting effects on achievement.

### *Accountability*

Determining whether programs are accomplishing their goals demands greater accountability, the final principle of effective early intervention. Programs that monitor progress, provide careful oversight, create clear expectations, and evaluate effects have shown dramatic results.

Good accountability looks at how faithful the intervention is to its original design. It asks, for example, Do the anticipated visits to parents in an Even Start Program actually take place? Do they follow a specified format? Do the visitors spend the expected amount of time in each home? Together, these details describe whether and to what degree families and children actually receive high-quality services.

Good accountability also uses valid, reliable, and accessible tools to measure not just the program's effects on cognition, but also its effects on other characteristics essential for school readiness, including social-emotional skills, dispositions for learning, and self-regulatory skills. In this respect, the National Reporting System requiring the testing of all Head Start children in language, prereading, and math skills has come under a firestorm of criticism for ignoring other important program goals. Poor accountability mechanisms can unfairly penalize programs and undervalue factors that have made those programs successful.

To some, accountability may appear as uncomfortable as a tax audit. However, good accountability is actually in the interest of the program designer. Accountability measures provide helpful information on the quality and intensity of the services and whether adjustments are needed to enhance the program's



tant dimensions of development. Children who come from disadvantaged circumstances often lack rich opportunities to learn. Striking disparities in their knowledge and skills mean that they need to catch up quickly. Therefore, early interventions should provide compensatory instruction to bridge the gap. Effective compensatory programs include these essential features:

■ They recognize that children's progress must be accelerated, and there-

effectiveness. Rather than continue to repeat the mistakes of the past, providers can look to accountability to provide a much-needed record of what works under what conditions, building a powerful knowledge base of effective intervention strategies for high-risk children and families.

Accountability helps make the process of teaching and learning a dynamic one, engaging everyone as a community in continuous improvement. It should not be used as a crude evaluation tool to judge teachers or children. Instead, accountability is designed to improve programs by using data to make better decisions in pursuit of better results,

what we can do to fundamentally change the odds for economically disadvantaged children. ■

## References

- Barnett, W. S. (1995). Long-term effects of early childhood programs on cognitive and school outcomes. *The Future of Children*, 5(3), 25–50.
- Bowman, B., Donovan, S., & Burns, M. S. (2000). *Eager to learn: Educating our preschoolers*. Washington, DC: National Academy Press.
- Bruner, C. (2004). *Many happy returns: Three economic models that make the case for school readiness*. Washington, DC: State Early Childhood Policy Technical Assistance Network.
- Campbell, F., & Ramey, C. (1995). Cognitive and school outcomes for high-risk African-American students at middle adolescence. *American Educational Research Journal*, 32, 743–772.
- Farran, D. C. (2000). Another decade of intervention for children who are low income or disabled: What do we do now? In J. P. Shonkoff & S. Meisels (Eds.), *Handbook of Early Childhood Intervention* (2nd ed., pp. 510–548). New York: Cambridge University Press.
- FPG Child Development Institute, University of North Carolina at Chapel Hill. (n.d.). *The Carolina Abecedarian Project*. Available: [www.fpg.unc.edu/~abc/#intervention](http://www.fpg.unc.edu/~abc/#intervention)
- Hauser-Cram, P., Pierson, D., Walker, D., & Tivnan, T. (1991). *Early education in the public schools*. San Francisco: Jossey-Bass.
- Herrnstein, R., & Murray, C. (1996). *The bell curve: Intelligence and class structure in American life*. New York: Free Press.
- Lyon, G. R., & Fletcher, J. (2001). Early warning system. *Education Next*, 2, 23–29.
- Neuman, S. B. (2003). From rhetoric to reality: The case for high-quality compensatory prekindergarten programs. *Phi Delta Kappan*, 85, 286–291.
- Neuman, S. B. (in press). *Changing the odds: Breaking the bleak cycle of poverty and disadvantage for children at risk*. New York: Guilford Press.
- Olds, D., Kitzman, H., Cole, R., Robinson, J., Sidora, K., Luckey, D., et al. (2004). Effects of nurse home-visiting on maternal life course and child development. *Pediatrics*, 114, 1550–1559.
- Raikes, H., Green, B., Atwater, J., Kisker, E., Constantine, J., & Chazan-Cohen, R. (2006). Involvement in Early Head Start home visiting services. *Early Childhood Research Quarterly*, 21, 2–24.
- Reynolds, A. (2000). *Success in early intervention*. Lincoln: University of Nebraska Press.
- Reynolds, A., Temple, J., Robertson, D., & Mann, E. (2001). Long-term effects of an early childhood intervention on educational achievement and juvenile arrest. *Journal of the American Medical Association*, 298(18), 2339–2346.
- Rodriguez, G. (1999). *Raising nuestros niños, bringing up Latino children in a bicultural world*. New York: Simon and Schuster.
- Rothstein, R. (2004). *Class and schools*. New York: Teachers College Press.
- Schweinhart, L. (2004). *The High/Scope Perry Preschool Study through age 40: Summary, conclusions, and frequently asked questions*. Ypsilanti, MI: High/Scope Educational Research Foundation.
- Shonkoff, J. P., & Meisels, S. (Eds.). (2000). *Handbook of early childhood intervention* (2nd ed.). New York: Cambridge University Press.
- Shonkoff, J. P., & Phillips, D. (Eds.). (2000). *From neurons to neighborhoods*. Washington, DC: National Academy Press.
- Smith, E., Pellin, B., & Agruso, S. (2003). *Bright Beginnings: An effective literacy focused prekindergarten program for educationally disadvantaged four-year-old children*. Arlington, VA: Educational Research Service.
- Snow, C., Burns, M. S., & Griffin, P. (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Wertheimer, R., & Croan, T. (2003). *Attending kindergarten and already behind: A statistical portrait of vulnerable young children*. Washington, DC: Child Trends.
- Zigler, E., & Valentine, J. (Eds.). (1979). *Project Head Start: A legacy of the war on poverty*. New York: Macmillan.

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Children learn best when they are healthy, safe, and in close and enduring relationships with family, caregivers, and teachers.

knowing that children's earliest years are precious and cannot be replayed or simply revised.

## Can We Improve Children's Lives?

Recent syntheses of research on economically disadvantaged children, early learning environments, and basic instructional strategies provide us with a rich set of clues about interventions that improve children's development. Early interventions can profoundly affect the developmental outcomes for disadvantaged children and their families—but only if the interventions are of high quality and follow the principles supported by the robust evidence now available.

These practical principles for enhancing children's daily environments help us turn predictable failure and despair into life-changing success and achievement. Together, they combine the lessons of research and practice to explode the myth that nothing works. They show what we need to do and